claims. Claim 1 was rejected under 35 U.S.C. §102(e) as being anticipated by Kmack et al. ("Kmack"). The Examiner stated that Kmack discloses an analysis system built into or connected to an analyzer, containing one or more software programs for analyzing measurement data output from the analyzer (citing col. 8, lines 21-35), and having a user interface for receiving input of parameters for analysis of measurement data (citing col. 8, lines 40-54), customization means capable of arbitrary customization of the user interface (citing col. 11, lines 19-28), and means capable of saving and restoring customized user interface states (citing col. 5, lines 6-8).

Applicant and applicant's counsel acknowledge with appreciation the indication of allowable subject matter with respect to claims 2-5. To obtain allowance of these claims, applicants have rewritten claims 2 and 3 in independent form to incorporate the subject matter of base claim 1. Claims 2 and 3 have been further amended to overcome the Examiner's indefiniteness rejections. Claims 4 and 5 have been amended in formal respects to improve the wording and the dependency of claims 4 and 5 has been changed so that they depend upon claim 2.

Based on the foregoing amendments, claims 2-5 are believed to be in allowable form.

In addition, the specification has been revised in minor respects to correct an informality and provide antecedent basis for newly added claim language. Claim 1 has been amended to more particularly point out and distinctly claim the novel aspects of the present invention.

To obtain a more comprehensive scope of coverage, new claims 6-27 have been added. Adequate support for the subject matter recited in these claims may be found in the specification as originally filed.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached pages are captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**."

Applicant respectfully submits that amended independent claim 1 and newly added claims 6-27 patentably distinguish over the prior art of record.

The present invention relates to an improved user interface for a sample analyzer having a computer.

As recited by amended independent claim 1, for example, the inventive user interface comprises a first display having one or more user-selectable control items for controlling a sample analysis procedure and one or more user-selectable analysis items for controlling analysis of measurement results, a second display generated in response to

user selection of a control item from the first display for requesting user input of parameters for use in controlling the sample analysis procedure, customization means for performing customization of the second display by generating a third display having user-selectable options for the parameters, and customized state storing/restoring means for saving and restoring customized states of the second display.

As described at pages 1-3 of the specification, analyzers have become integrated systems that not only detect and measure states of a sample in a prescribed environment and store and display these detected values, but are capable of implementing an assembly line approach for controlling the operation of a detector connected to a personal computer, extracting detected values to perform data processing, allowing display of data on a display screen as graphs or tables, performing analysis and collecting analysis results into the form of a report. Such systems can also take the form of integrated analyzers for reading information that has been stored in a storage medium from detectors in remote laboratories using communication means. The majority of functions used in this type of analyzer, from initial detection to the final creation of a report, are carried out through computer operation. Accordingly, in order to make the analysis functions easy, a comprehensive user interface is extremely important.

The foregoing type of analyzer is generally expensive and is often shared among a number of users, workplaces and functions. However, because analyzers generally require input of many parameters for control of the device or analysis of data, the number of parameters is increased when the analyzer is of the multi-functional type, which, in turn, complicates the user interface. In a thermal analyzer such as a differential scanning calorimeter, for example, entry of a large number of parameters is required for a temperature control program used for controlling sample and reference temperature values. One user may desire the ability to set many parameters in small increments while another user may opt for a display with a minimum number of input variables.

Also, since changing of temporarily set parameters by other people must be reset for the next operation, there is a need to be able to prevent the inadvertent permanent changing of settings. Although conventional analyzers allow customization of menu structures, they commonly hold only one customized state for a given program. Thus, it is often not possible to deal with varying needs of multiple users using conventional systems. There are currently no analyzers capable of subtle settings for each user in a user interface such as a dialog box.

The present invention provides an analyzer that enables the display and setting of a large number of parameters and can also handle the display and setting of only a minimum number of settings, and which prevents the unwanted permanent change of setting parameters.

In accordance with the present invention, means are provided for customizing a user-interface display to set input parameters in display/non-display states and/or input possible/input not possible states, for storing customized conditions for each of a plurality of users, and for returning set conditions for each user by reading out the stored information at the time of use.

In the embodiment illustrated in the application drawings, the inventive apparatus is a differential scanning calorimeter (DSC). If a switch of the analyzer is turned ON, the measurement software is launched to display a DSC measurement screen as a first display, as shown in Fig. 1. Icon buttons 1 for display selection, sample condition setting, temperature program and DSC/ABC setting (constant settings for compensation of temperature drift and thermal capacity drift of the measurement device) are displayed on the screen of the apparatus.

If a temperature program button is selected from the icon buttons 1 using a pointing device such as a mouse, a

second display, such as the temperature program parameter setting window shown in Fig. 2 is displayed, prompting user setting of four displayed parameters, namely, start temperature, limit temperature, rate of temperature rise and sampling interval corresponding to each step.

To enter these parameters, the user moves a cursor to an entry column for each parameter that requires setting on the display screen and inputs a numerical value.

There may be cases where one or more parameters, such as rate of temperature rise, is predetermined. In such cases, it is not necessary to change this setting and the display of this parameter is unwanted. By eliminating such parameters, a display format which displays only parameters that require data input would be presented, which is easier for a user to understand. In this case, the present invention provides means for specifying items that do not require input and placing them in a non-display state. To achieve this, the user moves a cursor 4 to not-to-be displayed input items, as shown in Fig. 3, to selected such items. At that point, a third display such as the pop-up menu 5 shown in Fig. 4 is displayed by operation of a pointing device, such as by right-clicking a mouse. The pop-up menu 5 includes items such as non-display state, input not possible, set input acquisition source, and all input possible.

If the user selects "non-display" in the pop-up menu 5 and left clicks the mouse, the column for input items 3 that were initially selected is placed in a non-display state and removed from the screen, as shown in Fig. 5. The same operations are carried out for other items that do not require a user to change settings, such as sampling interval. Thus, if a given user's task involves carrying out temperature control according to a single step, that task will be made much easier if input columns for other steps are placed in a non-display state. In such case, multiple items are grouped together using a method such as dragging to place them in reverse video mode, and it is then possible to change the state of these items collectively.

If the temperature program setting window is closed, the DSC measurement screen shown in Fig. 1 is displayed again. If the user then clicks on the "measurement" button, the analyzer enters measurement mode, measurement commences in accordance with the temperature program set as described above to carry out specified temperature control, detection data is acquired at specified time intervals, and measurement is completed.

If the user opens the temperature program setting window once again in order to perform a second measurement, the screen shown in Fig. 2 is not displayed at this time.

Instead, the screen with the customized non-display settings shown in Fig. 6 will be displayed. It is possible for the user to complete the temperature program setting by simply inputting values for the displayed items. This enables the user to carry out the temperature program setting reliably and simply without the concern omitting required input values.

No corresponding structure is disclosed or suggested by the prior art of record.

As pointed out above, amended independent claim 1 recites a user interface comprising a first display having one or more user-selectable control items for controlling a sample analysis procedure and one or more user-selectable analysis items for controlling analysis of measurement results, a second display generated in response to user selection of a control item from the first display for requesting user input of parameters for use in controlling the sample analysis procedure, customization means for performing customization of the second display by generating a third display having user-selectable options for the parameters, and customized state storing/restoring means for saving and restoring customized states of the second display.

Newly added independent claim 20 recites customization means for performing customization of the user interface <u>while the user interface is running</u>.

Kmack does not disclose or suggest a user interface for a sample analyzer. Nor does Kmack disclose the claimed first through third displays recited in amended claim 1 or an analysis system having customization means for customizing a user interface while the user interface is running.

More specifically, in the absence of any disclosure of a customization means for customizing a user interface while the user interface is running, as recited by independent claim 20, or a user interface comprising first and second displays having the claimed user-selectable elements, customization means for generating a third display for customizing the second display, and customized state storing/restoring means for saving and restoring customized states of the second display as required by amended independent claim 1, and the additional limitations thereto recited in the dependent claims, anticipation cannot be found. See, e.g., W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 313 (Fed. Cir. 1983), cert. denied, 469 U.S. 851 (1984) ("Anticipation requires the disclosure in a single prior art reference of each element of the claim under consideration"); and Continental Can Co. USA v. Monsanto Co., 20 USPQ2d 1746, 1748 (Fed. Cir. 1991) ("When more than one reference is required to establish unpatentability of the claimed invention anticipation under § 102 can not be found").

Kmack discloses a configurable workstation for customizing a portable computing device for use in data gathering for time and motion studies. Using the workstation, a setup routine is performed to generate customized data tables that are downloaded to the portable computing device(s) for use by the portable computing device to generate customized user interfaces that present predefined lists and parameters defined during setup so that the user of the portable computing device can quickly and easily select activities and parameters during a time and motion study for accurately recording data for subsequent analysis. Thus, the customized user interfaces are generated from data tables created during a setup routine performed on the workstation with the portable computing device connected thereto. Data such as elapsed time, activity name, and associated parameters, counts and comments can be recorded in the memory of the portable computing device as an activity record for subsequent analysis.

According to the present invention recited by newly added independent claim 20, the customization means performs customization of the user interface while the user interface is running. The Kmack user interface is set up on a workstation and downloaded to a portable computing device. Although it is customized during the setup routine using the

workstation, such customization does not occur while the user interface is running.

Moreover, the inventive user interface recited by amended independent claim 1 provides at least three displays, including a first display for displaying user-selectable control items used for controlling a sample analysis procedure and user-selectable analysis items for controlling analysis of measurement results. Kmack fails to disclose or suggest a first display containing these user-selectable elements. The second display recited by claim 1 is generated in response to user selection of a control item from the first display, and requests user input of parameters for use in controlling the sample analysis procedure. Kmack fails to disclose or suggest the claimed second display. The third display is generated by customization means for customizing the second display by providing user-selectable options for the parameters. Kmack fails to disclose or suggest the claimed third display. Nor does Kmack disclose the claimed customized state storing/restoring means for saving and restoring customized states of the second display.

The customized user interface of Kmack enables users to enter data and information related to an observed activity. The user interfaces are generated from one or more setup tables created by the workstation during the setup routine.

During setup, a user defines a list of activities for a particular task, and a list of parameters for defining the different activities. A list of possible values is also defined for each parameter. The parameters are then associated with the respective activities for defining each of the activities.

Although Kmack discloses means for customizing a user interface, it fails to disclose or suggest the claimed first through third displays and the specific contents thereof.

Nor does the save event function of Kmack equate to the customized state storing/restoring means of claim 1 for saving and restoring customized states of the second display.

The save event function of Kmack is presented to the user via the user interfaces of the portable computing device. The save event function performs multiple functions which simplify and streamline the data collection process. In particular, the save event button substantially simultaneously ends a time measurement period for an activity, resets a reference clock displayed to the user, and writes an activity record to memory for the activity that ended. It does not save and restore customized states of a second display.

Accordingly, amended claim 1 is believed to patentably distinguish over Kmack.

Newly added dependent claims contain all the limitations of base claim 1 and are patentable over Kmack for the same reasons as claim 1. Claims 6-19 are also independently patentable over Kmack for the following reasons.

Dependent claims 6 and 12 recite that the customization means generates a dialog box containing options that permit user-selection of whether or not respective items are to be displayed. Similarly, dependent claim 11 recites that the dialog box contains options that permit user-selection of whether or not user input of respective parameters is possible in the second display. Kmack fails to disclose or suggest the claimed subject matter.

Dependent claims 7, 13 and 14 recite that the customization means obtains a value of a respective parameter from a designated location when user input of the respective parameter is not permitted. Kmack fails to disclose or suggest the claimed subject matter.

Dependent claims 8, 10, 16 and 18 recite that the analyzer is a differential scanning calorimeter. Dependent claims 17 and 19 recite that the first display displays an image of sample characteristics or a data curve. Kmack fails to disclose or suggest the claimed subject matter.

Kmack also fails to disclose or suggest customized state storing/restoring means for saving and restoring

customized states matched to individual users when the sample analyzer is utilized by a plurality of users, as recited by dependent claims 9 and 15.

In view of the foregoing amendments and discussion, the application is not believed to be in condition for allowance. Accordingly, favorable reconsideration and allowance of the claims are most respectfully requested.

Respectfully submitted,

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MAILING CERTIFICATE

I hereby certify that this correspondence is being deposited with the United States Postal Service as first-class mail in an envelope addressed to: MS FEE AMENDMENT COMMISSIONER FOR PATENTS, P.O. Box 1450, Alexandria, VA 22313-1450, on the date indicated below.

Debra Buonincontri
Name

Debra Buonincontri
Signature

June 4, 2003
Date

"VERSION WITH MARKINGS TO SHOW CHANGES MADE"

IN THE SPECIFICATION:

Paragraph beginning at line 21 of page 4 has been amended as follows:

If a switch of the analyzer is turned ON, the measurement software is launched to display a DSC measurement screen as a first display as shown in Fig. 1. Icon buttons 1 for display selection, sample condition setting, temperature program and DSC/ABC setting (constant settings for compensation of temperature drift and thermal capacity drift of the measurement device) are displayed on the screen.

Paragraph beginning at line 28 of page 4 has been amended as follows:

If a temperature program button among the displayed icon buttons 1 is selected with a pointing device such as a mouse, a second display such as a temperature program parameter setting window [such] as [that] shown in Fig. 2 is displayed, prompting the setting of four parameters, namely, start temperature, limit temperature, rate of temperature rise and sampling interval corresponding to each step [, is displayed].

Paragraph beginning at line 6, page 6 has been am nd d as follows:

At the point where the cursor 4 is moved to the not-to-be-displayed input item 3 column and subjects are selected, with the present invention, a third display such as a pop-up menu 5 as shown in Fig. 4 is caused to be displayed by operation of a pointing device, such as right-clicking a mouse.

Paragraph beginning at line 20 of page 7 has been amended as follows:

If the user opens the temperature program setting window again in order to carry out a second measurement, the screen shown in Fig. 2 is not displayed, but instead the screen with the customized non-display setting shown in Fig. 6 is displayed. It is possible for the user to complete the temperature program setting by simply inputting values for the displayed items. It is possible to carry out the temperature program setting reliably and simply with no omission of input.

IN THE CLAIMS:

Claims 1-5 have been amended as follows:

1. (Amended) A user interface for a sample analyzer having a computer, comprising: a first display having one or more user-selectable control items for controlling a sample analysis procedure and one or more user-selectable analysis items for controlling analysis of measurement results; a second display generated in response to user selection of a control item from the first display for requesting user input of [An analysis system, built into an analyzer or connected to an analyzer, containing one or a plurality of software programs for controlling the analyzer or analyzing measurement data output from the analyzer, comprising a user interface for receiving input of] parameters for use in controlling the sample analysis procedure; [performing control of the measurement section or analysis of measurement data,] customization means for performing [capable of arbitrary] customization of the second display by generating a third display having user-selectable options for the parameters; [user interface ,] and customized state storing/restoring means for [of] saving and restoring customized [user interface] states of the second display.

2. (Amended) An analysis system, built into an analyzer or connected to an analyzer, containing one or more software programs for use in controlling the analyzer or analyzing measurement data output from the analyzer, comprising: a user interface for displaying items for which parameters are input by a user for use in controlling an analysis procedure performed by the analyzer or controlling analysis of measurement data; customization means for performing customization of the user interface; and customized state storing/restoring means for saving and restoring customized states of the user interface; [The analysis system of claim 1,] wherein [in] the customization means generates a [, individual input components in a user interface, such as] dialog box containing user-selectable options that permit user-selection of whether or not respective items are to be [boxes, can be optionally set to be] displayed [or not displayed].

3. (Amended) An analysis system, built into an analyzer or connected to an analyzer, containing one or more software programs for use in controlling the analyzer or analyzing measurement data output from the analyzer, comprising: a user interface for receiving input of parameters for use in controlling an analysis procedure performed by the analyzer or controlling analysis of measurement data;

customization means for performing customization of the user interface; and customized state storing/restoring means for saving and restoring customized states of the user interface; [The analysis system of claim 1,] wherein [in] the customization means generates a [, individual input components in a user interface, such as] dialog box that permits user-selection of whether or not user input of respective parameters is [boxes, can be optionally set to be input] possible [or input not possible].

4. (Amended) An [The] analysis system according to [of] claim 2; [1,] wherein [in] the customization means obtains a value of a respective parameter from a designated location when an item corresponding to the respective parameter is set to not be displayed in the second display [, when a component corresponding to parameter input is set to be not displayed, an input value can be obtained from information at an optionally designated location].

5. (Amended) An [The] analysis system according to [of] claim 2; [1,] wherein [in] the customized state [saving/restoration] storing/restoring means saves and restores customized states matched to individual users [,] when the analyzer [system] is utilized by a plurality of users [, it is possible to save/restore customized states matched to the respective users].